

CLAIMS

What is claimed is:

1. An article comprising:

a porous membrane, the membrane surfaces modified to be hydrophilic by polymerization of one or more monomers deposited on the membrane surface, the relative polar interaction and non-polar interactions characteristics of the surface modified membrane removes microbubbles from a liquid in contact with the modified membrane.
2. The article of claim 1 where the surface modified membranes are mechanically stable against degradation.
3. The article of claim 1 where the relative polar and non-polar interaction characteristics of the membrane are controlled by the concentration of amide and methylene moieties in the modified surface.
4. The article of claim 1 where the modified membrane is incorporated into a filtration device.
5. A composite porous membrane which comprises:

a polymeric porous membrane substrate having pores between about 0.005 and about 0.05 microns, the substrate having surfaces modified with amide groups, the amide groups derived from a polymerizable composition comprising one or more amide monomers deposited on surfaces of the porous substrate and polymerized in situ on the surfaces of the porous substrate.
6. The composite porous membrane of claim 5 where the polymerizable composition includes N, N-methylbisacrylamide (MBAM), dimethylacrylamide (DMAM), or a combination of these with MBAM/DMAM weight ratios of between about 1:0 to about 1:4.

7. The composite porous membrane of claim 5 where the polymerizable composition includes an initiator.
8. The composite porous membrane of claim 5 wherein the substrate is ultrahigh molecular weight polyethylene.
9. The composite porous membrane of claim 5 wherein the substrate is polytetrafluoroethylene.
10. The composite porous membrane of claim 5 having a mean IPA bubble point greater than 50 psi.
11. The composite porous membrane of claim 5 where the ratio of amide to methylene groups controls the polar and non-polar interaction characteristics of the membrane.
12. A process for removing microbubbles from a liquid which comprises filtering said liquid with a composite porous membrane substrate having an average pore size between about 0.01 and 0.03 microns formed of a first polymer, said substrate being directly coated on its entire surface with a cross-linked second polymer formed from a monomer polymerized in situ with a free radical initiator and monomer composition comprising N, N-methylbisacrylamide (MBAM) optionally admixed with dimethylacrylamide (DMAM), said monomer composition being cross-linked in situ on said substrate, said composite porous membrane having essentially the same porous configuration as said porous membrane substrate.
13. The process of Claim 12 wherein the first polymer is ultrahigh molecular weight polyethylene.
14. The process of claim 12 wherein the first polymer is polytetrafluoroethylene.
15. The process of claims 12 wherein said liquid is an acidic top antireflective coating.
16. The process of claims 12 wherein said liquid contains a surfactant.
17. The process of claim 16 wherein said liquid contains a fluoropolymer.

18. The process of claim 16 wherein said liquid contains a fluoropolymer and a surfactant.
19. The process of claim 16 wherein said surfactant is a fluorinated surfactant.
20. The process of claim 18 wherein said surfactant is a fluorinated surfactant.
21. A process for removing microbubbles from a liquid comprising: filtering the liquid with a porous membrane having a ratio of amide to methylene groups that controls the polar and non-polar interaction characteristics of the membrane.
22. The process of claim 21 further comprising the step of dispensing the liquid onto a spinning wafer.